THE ASTROPHYSICAL JOURNAL

Supplement Series

PUBLISHED BY THE UNIVERSITY OF CHICAGO PRESS FOR
THE AMERICAN ASTRONOMICAL SOCIETY

HELMUT A. ABT, *Managing Editor*
Kitt Peak National Observatory

JOHN S. GALLAGHER III, *Associate Managing Editor*
Lowell Observatory

YERVANT TERZIAN, *Associate Editor*
Cornell University

VIRGINIA TRIMBLE, *Associate Editor*
University of Maryland and
University of California, Irvine

AAS PUBLICATIONS BOARD

JULIE H. LUTZ (1986–1989), *Chairperson*
Washington State University

JOHN P. HUCHRA (1986–1989)
Center for Astrophysics

ROGER A. BELL (1987–1990)
University of Maryland

JEREMY R. MOULD (1988–1991)
California Institute of Technology

LEIF J. ROBINSON (1988–1991)
Sky Publishing Corporation

CATHERINE PILACHOWSKI (1989–1992)
Kitt Peak National Observatory

Production: EILEEN O'CONNOR

Manuscript Editor: ROBERT S. LEWIS, JR.

★ ★ ★

VOLUME 70

1989 MAY, JUNE, JULY, AND AUGUST

PUBLISHED BY THE UNIVERSITY OF CHICAGO PRESS FOR
THE AMERICAN ASTRONOMICAL SOCIETY

© 1989 BY THE AMERICAN ASTRONOMICAL SOCIETY. ALL RIGHTS RESERVED.
PUBLISHED MONTHLY

COMPOSED BY SCIENCE TYPOGRAPHERS, INC., MEDFORD, NEW YORK, U.S.A.
PRINTED BY CAPITAL CITY PRESS, INC.,
MONTPELIER, VERMONT, U.S.A.

THE ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES
CONTENTS OF VOLUME 70

1989 MAY, Number 1

		Page	Fiche
A CATALOG OF RICH CLUSTERS OF GALAXIES	*George O. Abell, Harold G. Corwin, Jr., and Ronald P. Olowin*	1	16-B1
PHOTOMETRIC PROPERTIES OF GALAXIES IN THE CLUSTER DC 1842–63	*Marylin Bell and Bradley C. Whitmore*	139	18-F11
THE CASE LOW-DISPERSION NORTHERN SKY SURVEY. VIII. A REGION CENTERED IN SOUTHERN BOOTES	*Peter Pesch and N. Sanduleak*	163	19-C3
THE CASE LOW-DISPERSION NORTHERN SKY SURVEY. IX. A REGION CENTERED IN NORTHERN BOOTES	*N. Sanduleak and Peter Pesch*	173	19-E1
AN INFRARED SURVEY OF GALACTIC SUPERNOVA REMNANTS	*Richard G. Arendt*	181	19-F9
A CASE STUDY OF A WC PLANETARY NEBULA NUCLEUS: HENIZE 2-99	*James B. Kaler, Richard A. Shaw, Walter A. Feibelman, and Julie H. Lutz*	213	21-C1
TRANSMISSION AND REFLECTION OF COMPRESSIVE WAVES AT A NONMAGNETIC-MAGNETIC INTERFACE	*Toufik E. Abdelatif and John H. Thomas*	239	21-E7
INSTRUCTIONS TO AUTHORS		i	21-G5

1989 JUNE, Number 2

MILLIMETER, CENTIMETER, AND CARBON MONOXIDE OBSERVATIONS OF RADIO-QUIET QUASARS AND LUMINOUS SEYFERT 1 GALAXIES DETECTED BY *IRAS*	*Richard Barvainis and Robert Antonucci*	257	22-B1
THE WASILEWSKI SAMPLE OF EMISSION-LINE GALAXIES: FOLLOW-UP CCD IMAGING AND SPECTROSCOPIC AND *IRAS* OBSERVATIONS	*Gregory D. Bothun, Jules P. Halpern, Carol J. Lonsdale, Chris Impey, and Mark Schmitz*	271	22-C7
INTERSTELLAR MATTER IN EARLY-TYPE GALAXIES. I. *IRAS* FLUX DENSITIES	*G. R. Knapp, P. Guhathakurta, D.-W. Kim, and M. Jura*	329	23-B1
ERROR ANALYSIS OF A TREE CODE	*Joshua E. Barnes and Piet Hut*	389	23-F11
TREESPH: A UNIFICATION OF SPH WITH THE HIERARCHICAL TREE METHOD	*Lars Hernquist and Neal Katz*	419	24-B5

1989 JULY, Number 3

OBSERVATIONS OF A COMPLETE SAMPLE OF EMISSION-LINE GALAXIES. I. CCD IMAGING AND SPECTROSCOPY OF GALAXIES IN UM LISTS IV AND V	*John J. Salzer, Gordon M. MacAlpine, and Todd A. Boroson*	447	25-B1
OBSERVATIONS OF A COMPLETE SAMPLE OF EMISSION-LINE GALAXIES. II. PROPERTIES OF THE UM SURVEY GALAXIES	*John J. Salzer, Gordon M. MacAlpine, and Todd A. Boroson*	479	25-D6
RADIO EMISSION FROM YOUNG SUPERNOVA REMNANTS: EFFECTS OF AN INHOMOGENEOUS CIRCUMSTELLAR MEDIUM	*John R. Dickel, Jean A. Eilek, Eric M. Jones, and Stephen P. Reynolds*	497	25-F5
A MOLECULAR LINE SURVEY OF SAGITTARIUS B2 AND ORION–KL FROM 70 TO 115 GHz. I. THE OBSERVATIONAL DATA	*B. E. Turner*	539	26-C1
THE LATE A-TYPE STARS: REFINED CLASSIFICATION, CONFRONTATION WITH STRÖMGREN PHOTOMETRY, AND THE EFFECTS OF ROTATION	*R. O. Gray and R. F. Garrison*	623	27-B7
SOUTHERN MILKY WAY CARBON STARS: NEW CANDIDATES, *JHK* PHOTOMETRY, AND RADIAL VELOCITIES	*Marc Aaronson, Victor M. Blanco, Kem H. Cook, and Paul L. Schechter*	637	27-D1

MODELS OF WHITE DWARFS UNDER RAPID UNIFORM OR DIFFERENTIAL ROTATION: NUMERICAL RESULTS ..... *V. S. Geroyannis and A. A. Hadjopoulos* 661 27-F1

ERRATUM
A CATALOG OF CANDIDATE FIELD HORIZONTAL-BRANCH STARS. I.
Timothy C. Beers, George W. Preston, and Stephen A. Shectman 679 28-A1

ADDENDUM
COLLISIONAL EXCITATION OF INTERSTELLAR WATER ..... *A. Palma, S. Green, D. J. DeFrees, and A. D. McLean* 681 28-A9

1989 AUGUST, Number 4

A PHOTOMETRIC CATALOG OF COMPACT GROUPS OF GALAXIES
Paul Hickson, Enrico Kindl, and Jason R. Auman 687 29-B1

GLOBAL PROPERTIES OF INFRARED BRIGHT GALAXIES
Judith S. Young, Shuding Xie, Jeffrey D. P. Kenney, and Walter L. Rice 699 29-C1

X-RAY MORPHOLOGIES OF ABELL CLUSTERS ..... *S. L. W. McMillan, M. P. Kowalski, and M. P. Ulmer* 723 29-E1

A CO SURVEY OF REGIONS AROUND 34 OPEN CLUSTERS
David Leisawitz, Frank N. Bash, and Patrick Thaddeus 731 30-A1

COLLISIONAL EXCITATION OF INTERSTELLAR MOLECULES: DEUTERATED WATER, HDO
Sheldon Green 813 31-A1

MILLIMETER- AND SUBMILLIMETER-WAVE SURVEYS OF ORION A EMISSION LINES IN THE RANGES 200.7–202.3, 203.7–205.3, AND 330–360 GHz
P. R. Jewell, J. M. Hollis, F. J. Lovas, and L. E. Snyder 833 31-D1

ABUNDANCES OF THE HEAVY ELEMENTS IN THE MAGELLANIC CLOUDS. I. METAL ABUNDANCES OF F-TYPE SUPERGIANTS ..... *Stephen C. Russell and Michael S. Bessell* 865 32-A1

HOW TO UNVEIL A T TAURI STAR
Patrick Hartigan, Lee Hartmann, Scott Kenyon, Robert Hewett, and John Stauffer 899 32-D1